

ACCESSION #: 9906230134

NON-PUBLIC?: N

LICENSEE EVENT REPORT (LER)

FACILITY NAME: Virgil C. Summer Nuclear Station PAGE: 1 OF 3

DOCKET NUMBER: 05000395

TITLE: Manual Reactor Trip Due to Main Turbine High Vibration

EVENT DATE: 05/18/99 LER #: 1999-008-00 REPORT DATE: 06/17/99

OTHER FACILITIES INVOLVED: DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 82

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:

50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:

NAME: A. R. Rice, Manager, TELEPHONE: (803) 345-4232

Nuclear Licensing & Operating Experience

COMPONENT FAILURE DESCRIPTION:

CAUSE: X SYSTEM: TA COMPONENT: TRB MANUFACTURER: G080

REPORTABLE EPIX: No

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

On May 18, 1999, following the completion of RF11 in which the Main Turbine HP Rotor was replaced and during the initial power escalation, plant personnel initiated a manual reactor trip at 82% in response to high vibration on Main Turbine Bearings 1 and 2. As turbine load was being increased, Operations received the Main Turbine Vibration High Annunciator. After verifying actual vibration, Operations initiated a load reduction to attempt to decrease the level of vibration. The levels of vibrations continued to increase as the load was reduced. In accordance with plant procedures, Operations

initiated a manual reactor trip when the vibration on Bearing #2 increased above 12 mils. The cause of the high vibration was determined to be light rubbing within the new mono-block high turbine rotor. On May 19, 1999, the plant was restarted successfully.

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#### PLANT IDENTIFICATION

Westinghouse - Pressurized Water Reactor

#### EQUIPMENT IDENTIFICATION

EIIS Code - TA

Main Turbine

#### IDENTIFICATION OF EVENT

Manual Reactor Trip - This event has been documented on CER 99-0780.

#### EVENT DATE

May 18, 1999

#### REPORT DATE

June 17, 1999

#### CONDITIONS PRIOR TO EVENT

Mode 1 - 82% Reactor Power

#### DESCRIPTION OF EVENT

On May 18, 1999, at 0033 hours, the plant was being returned to service following the replacement of the high pressure turbine with a new mono-block rotor. At 82% power, Operations received the Main Turbine Vibration High Annunciator due to an increase in Main Turbine Bearings 1 and 2 vibration. Electrical Maintenance and the Turbine Building Operator

were dispatched to the Main Turbine to verify actual vibration. The vibration levels continued to increase. Operations initiated a load reduction in an attempt to decrease the magnitude of the vibration. The vibration levels continued to increase as load was reduced. At 0043, in accordance with the Annunciator Response Procedure (ARP), Operations initiated a Manual Reactor Trip from 72 percent power when the vibration on Bearing 2 increased above 12 mils. Following the trip, a decrease in vibration was observed. All systems responded as designed. Following an investigation of the cause for the high vibration, the plant was restarted.

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#### CAUSE OF THE EVENT

The cause of the high vibration was attributed to light rubbing within the new mono-block high pressure turbine rotor. It is believed that during power escalation either: 1) the opening of the #4 control valve at approximately 83% power caused a thermal transient in the HP Turbine resulting in slightly uneven heating and growth of the turbine casing; or 2) friction as the shell expanded induced uneven growth relative to the turbine shaft.

#### ANALYSIS OF EVENT

All safety systems responded as designed. All auxiliary and secondary systems responded appropriately. All control rods inserted fully into the core. No pressurizer or main steam relief valves opened. The plant was stabilized in Mode 3. Steam generator levels were maintained using

emergency feedwater. Temperatures were controlled by dumping steam to the condenser.

In discussions with the turbine vendor, it was determined that following rotor replacement, turbine rubs of the magnitude experienced are not unusual and should be expected during initial turbine startup.

#### IMMEDIATE CORRECTIVE ACTIONS:

Reactor power was reduced in an attempt to decrease the magnitude of the vibration. The vibration levels continued to increase as load was reduced.

Operations initiated a Manual Reactor Trip from 72 percent power when the Bearing #2 increased to 12 mils. The cause of the high vibration was attributed to light rubbing within the new mono-block high pressure turbine rotor. The HP Turbine vibration readings were less than 2 mils during rollup through the critical speeds when packing rubs would normally be identified. No rubs were identified prior to the 83% power level.

#### ADDITIONAL CORRECTIVE ACTIONS

A modified startup plan was utilized by Operations during plant restart.

At approximately 75% reactor power, power was increased at one-half (1/2)% per twenty minutes rather than 1%. The High Pressure Turbine shell was also re-lubricated prior to restart. In addition the control valve drain line isolation valve was cycled before #4 control valve opened to ensure no pooling of moisture in the drain line had occurred. There were no significant increases in vibration of Bearings 1 and 2 during the plant startup. The plant restarted at 0207 on May 19, 1999 with breaker closure

at 0225.

**PRIOR OCCURRENCES**

None

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**SCE&G**

**A SCANA COMPANY**

June 17, 1999

RC-99-0115

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Washington, DC 20555

Gentlemen:

Subject: VIRGIL C. SUMMER NUCLEAR STATION

DOCKET NO. 50-395

OPERATING LICENSE NO. NPF-12

LICENSEE EVENT REPORT (LER 1999-008-00)

Attached is Licensee Event Report No. 1999-008-00, for the Virgil C. Summer Nuclear Station (VCSNS). This report is being submitted pursuant to the requirements of 10CFR50.73 (a)(2)(iv).

Should you have any questions, please call Ms. Susan B.

Reese at (803) 345-4591.

Very truly yours,

Gary J. Taylor

SBR/GJT/sr

Attachment

c: J.L. Skolds P. Ledbetter

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